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PATENT & TRADEMARK OFFICE

Atty. Dkt. No. 025416-0204

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: William Daniel Toohey

Title: DIGITAL VIDEO AUDIT SYSTEM

Appl. No.: 09/239,671

Filing Date: 01/29/1999

Examiner: Daniel St Cyr

Art Unit: 2876

CERTIFICATE OF MAILING
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below.

Jose Ramos
(Printed Name)

(Signature)

July 20, 2005
(Date of Deposit)

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DECLARATION UNDER 37 CFR 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The undersigned, William Daniel Toohey, hereby declares and states as follows:

1. The purpose of this Declaration is to establish conception of the invention of the above-referenced U.S. Patent Application in the United States at a date prior to October 9, 1998, coupled with due diligence from prior to October 9, 1998, to the filing date of the application, where October 9, 1998, is the earliest priority date relied upon by U.S. Patent Number 6,583,813 entitled "System and Method for Capturing and Searching Image Data Associated with Transactions", which was cited in the Office Action dated February 22, 2005, for the above-referenced patent application.

2. The undersigned is the sole inventor named in the above-referenced application.

3. To establish the date of conception of the invention of this application, the following attached documents are submitted as evidence:

a. a DRPA Digital VSAS Conceptual Design document dated prior to October 9, 1998 (date redacted), showing the conception of a Digital Video Surveillance and Audit System (VSAS) in which: (i) the system is completely digital and requires no videotape unless a videotape is desired; (ii) a camera is connected to a computer via a digital video capture card; (iii) the computer is connected to a lane controller and receives a trigger signal instructing the computer to capture a current image to memory; (iv) the image is merged with the transaction data received from the lane controller into a database that can handle both data and images; (v) an image is captured every time a vehicle axle count is registered (e.g. a two axle car has two digital images associated with the transaction); (vi) images are captured utilizing the light curtain in E-ZPass lanes; (vii) the video feed can be split and sent to a monitor for real time monitoring; (viii) the database contains both the transaction data and the associated image; (ix) a playback station takes the data and images stored in the database and provides a mechanism to review the transaction data and the associated images; (x) the data can be retrieved by transaction number, date, lane, time, collector, unusual occurrence, class mis-match, and violation; and (xi) if any audit changes are required, the operator can make appropriate adjustments; (Exhibit 1);

b. a Delaware River Port Authority Toll Collection System Upgrade Functional Design Document (FDD) dated prior to October 9, 1998 (date redacted), showing the conception of a Digital Video Surveillance and Audit System in which: (i) a digital video audit recorder records images at approximately one picture per second; (ii) the images are associated with the date, time, and camera so that they can be correlated with the toll transactions during playback; and (iii) the operator can search by date, time, transaction number, and type of transaction; (Exhibit 2); and

c. a Delaware River Port Authority Toll Collection System Upgrade Functional Design Document (Revision 2) dated prior to October 9, 1998 (date redacted), showing the conception of a Digital Video Surveillance and Audit System in which: (i) the digital video audit recorder records images at a variable rate; (ii) when a request is submitted, a host computer is queried and the transaction data is returned along with its digital image; and (iii)

an action bar window displays options to move the image back one frame, advance to the next image, move back to a previous transaction in a series, and advance to a next transaction in a series (e.g. next transaction with a corresponding unusual occurrence); (Exhibit 3).

4. The documents in Exhibits 1, 2, and 3 referenced above have dates that have been redacted for the public record. However, the redacted dates are prior to October 9, 1998.

5. To establish due diligence from prior to October 9, 1998, to the filing date of the present application (constructive reduction to practice), the following attached documents are submitted as evidence:

a. an e-mail chain that shows: (i) the inventor, Daniel Toohey, sent an e-mail to Andrea Cohen on September 21, 1998, seeking information on pursuing a patent on the DRPA Digital Video Audit System; (ii) Andrea Cohen sent an e-mail to John Worthington on September 21, 1998, regarding the DRPA Digital Video Audit Patent; (iii) John Worthington sent an e-mail to Andrea Cohen on October 8, 1998, telling her that he thinks they need to accelerate the filing of the DRPA Digital Video Audit Patent; (iv) Andrea Cohen sent an e-mail to Michael Lachuk on October 8, 1998, stating that she passed Dan's patent information on to Michael on 10/4/98 and let him know they wanted to file an application, and instructing Michael to immediately proceed with getting the application filed; (v) Michael Lachuk sent an e-mail to John Worthington on October 9, 1998, stating that the invention disclosure is more than sufficient to get an outside patent attorney started on preparing the application; and (vi) John Worthington sent an e-mail to Michael Lachuk on October 10, 1998, giving authorization to proceed with the patent application; (Exhibit 4);

b. part of a New Matter Form from Kilpatrick Stockton LLP dated 10/30/98 showing the creation of a new matter for drafting a patent application for Science Applications International Corporation concerning DRPA Digital Video Audit; (Exhibit 5); and

c. a letter from Kilpatrick Stockton LLP to inventor Dan Toohey dated January 20, 1999, forwarding a copy of a draft patent application for review (Exhibit 6).

6. From the above-referenced, attached documents, it can be seen that there was conception of the invention in the United States prior to October 9, 1998, coupled with due diligence from prior to October 9, 1998, to the filing date of the application (constructive reduction to practice), where October 9, 1998, is the earliest priority date relied upon by U.S. Patent Number 6,583,813.

7. The present application was diligently filed on January 29, 1999, following review and finalization of the draft application by the inventor.

8. This Declaration is submitted prior to a final rejection.

9. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both (18 U.S.C. 1001), and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

William Daniel Toohey
Inventor

July 19, 2005
Date

FOLEY & LARDNER LLP
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DRPA Digital VSAS Conceptual Design

Overview

The Video Surveillance and Audit System (VSAS) provides two primary functions to the Authority. First, it serves as a real time toll plaza surveillance system for the Port Authority Police. This allows them to monitor all activities occurring in the plaza from their operations center at each bridge. Second, the VSAS provides a visual audit of all transactions in the lanes. This allows the Authority's auditing staff to visually verify the vehicle's characteristics (e.g. number of axles, type of vehicle, trailer present, etc.) for every toll transaction in any mode of operation (manual, E-Z Pass, Mixed Mode).

System Features

- Utilizes off-the-shelf hardware (non-proprietary technology)
- Fully integrated into the toll collection Lane/Plaza/Host computer systems
- Easily maintained and upgraded
- Provides complete video audit trail with single point of data storage
- Completely digital, requires no video tape (unless a videotape copy is desired)
- Utilizes existing cameras / mounts

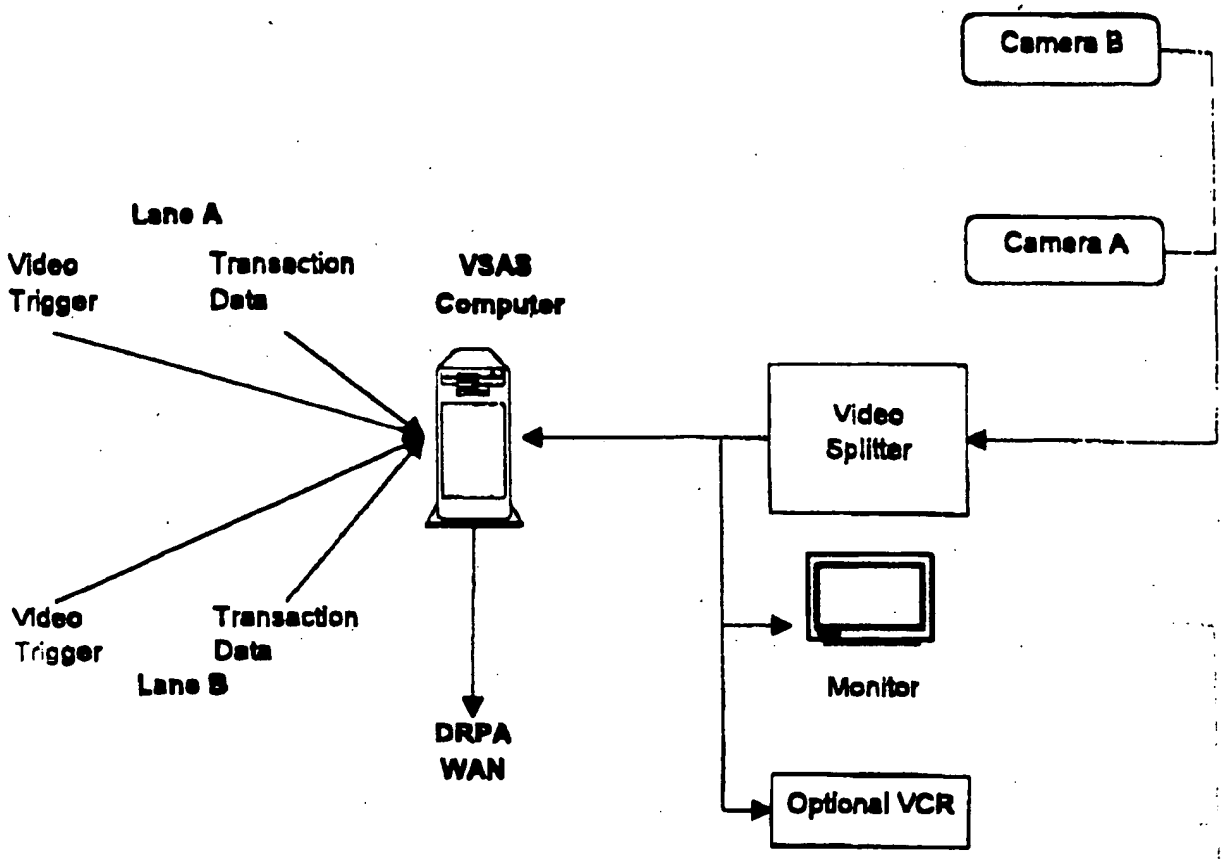
VSAS System Architecture

The VSAS system will utilize the existing cameras, camera housings and mounts. Each camera is positioned to cover from four to eight toll lanes simultaneously. Each camera will be connected to the plaza VSAS computer (Windows NT box) via a digital video capture card. The VSAS computer also is connected to the lane controllers and receives a trigger (possibly digital I/O) signal instructing the VSAS computer to capture the current image to memory. The image is then merged with the transaction data received from the lane controller via an Ethernet connection into an database that can handle both data and images. An image is captured every time a vehicle axle count is registered (e.g. a two axle car has two digital images associated with the transactions, a five axle truck has five images associated with it). Images can also captured utilizing the light curtain in E-ZPass lanes.

The video feed can also be split and sent to a monitor in order for the DRPA Police to monitor the lanes in real time. A viewing monitor is also provided which allows the Port Authority to view any one of the camera images at any time. A manual switch is provided to allow the Authority to pick which image to view on the monitor. This video signal can also be written to a timelapse VCR (as is done today) if desired.

The following is the camera configurations and coverage at the four bridges:

CBB	1	8	8
WWB	4	15	4
BFB	3	14	5
BRB	2	11	6



Images are stored locally at the plaza in an object oriented database. The database contains both the transaction data and the associated image. The database can then be transmitted over the DRPA WAN during times of low network traffic. If the network capacity doesn't allow for the transmission of the data, the image database can also be written onto a transportable media (CD, MO, DVD) and delivered to One Port Center for processing and storage.

Video Audit Playback System Architecture

The playback station utilizes a standard PC running Windows NT. The playback takes the data and images stored in the VSAS database and provides a mechanism to review the transaction data and the associated images by various means. The data can be retrieved by:

- Transaction Number
- Date, Lane, Time
- Date, Collector, Time
- Date, Lane, Unusual Occurrence / Class Mis-match / violation
- Date, Collector, Unusual Occurrence / Class Mis-match / violation

The image can then be reviewed and if any audit changes are required, the operator can then tie into the Toll System through the network, and make the appropriate adjustments.

The Playback system should be sized to handle 3 months of data on line with the long term storage of the image database on a magnetic tape.

DELAWARE RIVER PORT AUTHORITY

TOLL COLLECTION SYSTEM UPGRADE
FUNCTIONAL DESIGN DOCUMENT (FDD)

[redacted]

Prepared by

TRANSCORE
An SAIC Company

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X. Digital Video Surveillance and Audit System

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X.0 Video Surveillance and Audit System

The Digital Video Audit System (DVAS) provides a "time correlated" video audit of all transactions in the lanes. This is accomplished using "Digital Video Recording" combined with state of the art Wavelet video compression technology. Each camera at each bridge will be connected to a Digital Video Audit Recorder (DVAR), which is connected to the DRPA wide area network. At the CBB Bridge, there will be one camera, the WWB Bridge 2, the BFB Bridge 3 and the BRB 2, for a total of 10 cameras interfaced with 4 DVAR's, one at each bridge location).

The DVAR records images at approximately one picture per second. The images are associated with the date, time and camera so that they can be correlated with the toll transactions during the playback at the review station. If the network capacity does not allow for the transmission of the data, the images can optionally be written onto a transportable media (DAT Tape) and delivered to One Port Center for processing and storage.

The Digital Video Server, located at One Port Center, will be the repository for all the images obtained throughout the DRPA System from all the DVAR's. It is configured with a DAT Tape drive to either read in images from the remote locations or to perform back-up and data archiving functions.

The recorded digital video can be reviewed at anytime using a Playback Workstation connected to the network. The Workstation(s) will provide software that will enable the operator to search by date, time, transaction number, type of transaction etc. Based on the DRPA system we expect approximately 8.7 GB of storage per day.

This proposed system allows the Authority's auditing staff to visually verify the vehicle's characteristics (e.g. number of axles, type of vehicle, trailer present, etc.) for every toll transaction in any mode of operation (manual, E-Z Pass, Mixed Mode). The video system can also be integrated with a real-time toll plaza surveillance system for the Port Authority Police. This would allow the monitoring all activities occurring in the plaza from their operations center at each bridge.

X.1 Architecture

The VSAS system will utilize the existing cameras, camera housings and mounts. The configuration at the bridges is as follows:

Comdr. Barry Bridge	1	8	8
Walt Whitman Bridge	4	15	4
Ben Franklin Bridge	3	14	5

Betsy Ross Bridge	2	11	6

Each camera will be connected to a DVAS Computer located in the Bridge Building. This DVAS Computer is also connected to local area network and receives all transaction data in real time from the lane controllers. The DVAS Workstation extracts the appropriate data from the LAN based on the lane coverage and time of the image and the toll transaction. A viewing monitor is also provided which allows the DRPA to view any one of the camera images at any time. A manual switch is provided at each bridge location to allow the VSAS operator to pick which camera view to display on the monitor.

Each camera is positioned to cover from four to eight toll lanes simultaneously and is connected to a DVAS Computer.

The DVAS will be a PC running Windows NT and configured with a hard drive, a network card, one TransCore "Quad Video Digitizers". The quad digitizer consists of four independent video digitizers each with their own synchronization and eight-frame video memory. This approach allows one digitizer channel per camera and therefore will not require the cameras to be Gen-locked or the DVAS system to switch between cameras causing delays in image capture.

The Quad Digitizer is a PCI based board and occupies one PCI slot. Using this type of quad architecture allows each camera to have its own digitizer and will therefore always be ready to record without switching a particular camera to a particular video input.

The VESC will run a watchdog application interfaced with a hardware watchdog device that will power restart the entire VESC computer if a malfunction is detected that could prevent the VESC from processing violations.

The VESC is attached to the local area network at each Bridge. The VESC's will transfer images that are captured to the DVAS Server via the DRPA WAN where they will be available for review.

X.2 Video Audit Playback System Architecture

The playback station provides the functionality of reviewing the recorded video images. The Playback station consists of a DVAS Workstation (Personal Computer) connected to the DRPA network.

The playback station uses a standard PC running Windows NT. The playback takes toll transaction data and correlates it to the associated images in the system to provide a visual audit/verification of the transaction. The data / images can be retrieved by:

- Transaction Number
- Date, Lane, Time

- Date, Collector, Time
- Date, Lane, Unusual Occurrence / Class Mis-match / violation
- Date, Collector, Unusual Occurrence / Class Mis-match / violation

The image(s) can then be reviewed and if any audit changes are required, the operator makes the changes to the toll database.

The Playback Server system can be sized to handle the required days of storage based on 8.6 GB day. For example 5 days of on line storage would required approximately 43 GB of storage. The server proposed is will have the disk capacity to handle 5 days of images. It is also important to note that the all the images on the system for each day can be archived on one DAT Tape.

X.3 VSAS System Components

1. DVAS Computers (4)
2. DVAS Server (1)
3. DVAS Playback Unit (1)

X.4 System Metrics

The following metrics were used in the design of the DVSAS

BRIDGE	# Cameras	#lanes	#VAS Computers	Seconds/Day	Image File Size	Req'd Disk Space Bytes/Day/VAS
CBB	1	8	1	86400	10000	864,000,000
WWB	4	15	1	86400	10000	3,456,000,000
BFB	3	14	1	86400	10000	2,592,000,000
BRB	2	11	1	86400	10000	1,728,000,000
Day Total	10	48	4			8,640,000,000

APPENDIX X

VIDEO SURVEILLANCE SYSTEM (VSS)

Revision 2

Digital Video Surveillance and Audit System

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X.0 Video Surveillance and Audit System

The Digital Video Audit System (DVAS) provides a "time correlated" video audit of all transactions in the lanes. This is accomplished using "Digital Video Recording" combined with state of the art Wavelet video compression technology. Each camera at each bridge will be connected to a Digital Video Audit Recorder (DVAR), which is connected to the DRPA wide area network (for time synchronization purposes).

The DVAR records images at a variable rate. The standard capture rate is one image per second. The DVAR does have the capability of capturing images at a rate of 2 images per second and also at the rate of one image every two seconds. All capacity calculations were performed at the default setting of one image per second.

The images are associated with the date, time and camera so that they can be correlated with the toll transactions during the playback at the review station. The images reside on the DVAR and can be called up and reviewed by the Digital Video Review Station. The data (images) can optionally be written onto a transportable media (e.g. 2 GB Iomega Jaz Disk) for delivery to other agencies or for long term storage is desired.

The Digital Video Review Station (DVRS), located at One Port Center, will be the repository for all the images obtained throughout the DRPA System from all the DVAR's. It is connected to the network which allows it to obtain digital images stored on the DVARs at any plaza and the transaction data stored on the Toll Host computer

This proposed system allows the Authority's auditing staff to visually verify the vehicle's characteristics (e.g., number of axles, type of vehicle, trailer present, etc.) for every toll transaction in any mode of operation (manual, E-Z Pass, Mixed Mode).

X.1. Plaza DVSS Architecture

The VSAS System will utilize the existing cameras, camera housings and mounts. The configuration at the four bridges is as follows:

Comdr. Barry Bridge	1	7	7
Walt Whitman Bridge	4	15	4
Ben Franklin Bridge	3	13	5
Betsy Ross Bridge	2	10	5
Total	10	45	

Each camera will be connected to a DVAS Computer located in the Bridge Building in the current location of the existing Video Surveillance System. This DVAS Computer is also connected to local area network and receives the identical network time synchronization message that the lane controllers receive. This ensures that the DVSS and the toll transaction times are identical.

A viewing monitor is also provided which allows the DRPA to view any one of the camera images at any time. A manual switch is provided at each bridge location to allow the VSAS operator to pick which camera view to display on the monitor.

Each camera is position to cover from four to seven toll lanes simultaneously and is connected to a DVAS Computer.

The DVAS will be a PC running Windows NT and configured with a hard drive, a network card, and one or two TransCore Quad Video Digitizers, depending on the number of connected cameras. The quad digitizer consists of four independent video digitizers each with their own synchronization and eight-frame video memory. This approach allows one digitizer channel per camera and therefore will not require the cameras to be Gen-locked or the DVAS system to switch between cameras causing delays in image capture.

The Quad Digitizer is a PCI based board and occupies one PCI slot. Using this type of quad architecture allows each camera to have its own digitizer and will therefore always be ready to record without switching a particular camera to a particular video input.

The DVAS will also run a watchdog application interfaced with a hardware watchdog device that will power restart the entire DVAS computer if a malfunction is detected that could prevent the DVAS from processing images.

X.1.1 Image Capture

The DVAS can be configured to capture images at the following rates:

- One (1) image per second (the default and recommended setting)
- Two (2) images per second
- One (1) image every two(2) seconds

While the system will be able to be set to two images per second, it is recommended that only two cameras (rather than a maximum of four) be processed through a single DVAS computer.

The images captured will be 768 x 480 pixels in size and compressed using Wavelet video compression.

X.1.2 Daily Image Processing

All captured images will be saved to the DVAS computer's hard disk. This hard disk will be a 54 Gb. This will be enough to handle at least 22 days of storage on the DVAS without the possibility of overwriting non-archived data.

[redacted]	
Comdr. Barry Bridge	89
Walt Whitman Bridge	22
Ben Franklin Bridge	29

Betsy Ross Bridge	44

X.1.3 Image Naming Scheme

The digital images generated at the DVSS Computer located at each bridge are generated using a specific naming convention that identifies the camera, date and time. This uniquely identifies each image and allows the image to be associated with the transaction data after the fact.

Each image will be assigned a name with the following format: ABBBBBBBBCCCCCD

Where:
A = Camera (Valid entries: A-Z)
B = Date (Year Month Day format)
C = Seconds since 00:00:00
D = ½ second indicator (0 = whole second, 1 = ½ second)

Camera Assignments:

Bridge	Camera	Code
CBB	1	A
	Unassigned	B
	Unassigned	C
	Unassigned	D
WWB	1	E
	2	F
	3	G
	4	H
	Unassigned	I
	Unassigned	J
	Unassigned	K
BFB	1	L
	2	M
	3	N
	Unassigned	O
	Unassigned	P
	Unassigned	Q
BRB	1	R
	2	S
	Unassigned	T
	Unassigned	U

The system has unassigned camera numbers in order to support future growth by expanding the number of cameras at any location.

X.1.4 Image Transfer to One Port Center

The images will reside on the individual DVAR PCs and only transferred to One Port Center as the individual image is reviewed. The current DRPA wide area network is capable of transmitting up to ten images per second and therefore easily able to accommodate two review stations.

X.2 Video Audit Playback System Architecture

The playback station provides the functionality of reviewing the recorded video images. The Playback station consists of a DVAS Workstation connected to the DRPA network which is linked to the Toll Host Computer.

The playback station is a standard PC running Windows NT. The playback takes toll transaction data and correlates it to the video images to provide a visual audit/verification of the transaction.

The data/images can be retrieved by:

- Date, Lane, Time
- Date, Collector, Time
- Date, Lane, Unusual Occurrence/Class Mis-match/violation
- Date, Collector, Unusual Occurrence/Class Mis-match/violation

The image(s) can then be reviewed and if any audit changes are required, the operator makes the changes to the toll audit database by signing on to the Toll System.

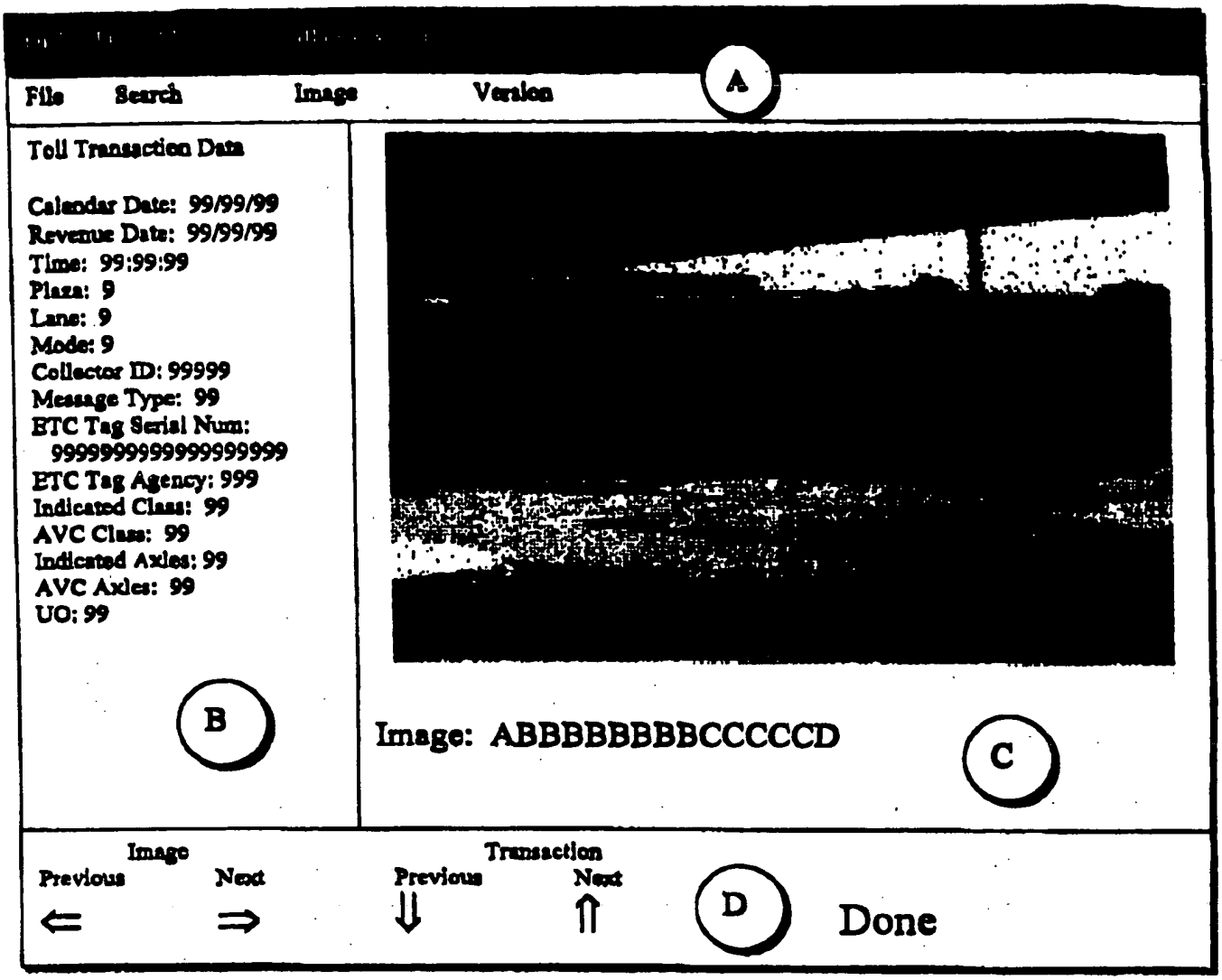
X.2.1 Main Review Station Screen

The main playback screen is sectioned off into four different areas: Menu Functions, Toll Data, Image, and the Action Bar

The following graphic shows the playback screen.

Where:

(A) – Represents the Menu Function section
(B) – Represents the Toll Data section
(C) – Represents the Image section
(D) – Represents the Action Bar section


File
Search
Image
Version
A
Toll Transaction Data
Calendar Date: 99/99/99
Revenue Date: 99/99/99
Time: 99:99:99
Plaza: 9
Lane: 9
Mode: 9
Collector ID: 99999
Message Type: 99
ETC Tag Serial Num:
9999999999999999999
ETC Tag Agency: 999
Indicated Class: 99
AVC Class: 99
Indicated Axles: 99
AVC Axles: 99
UO: 99
B
Image: ABBBBBBBBCCCCCD
C
Image
Previous
Next
Transaction
Previous
Next
D
Done

X.2.2 Menu Functions

This section explains the menu selections found in the Menu Function window.

The top level pull down menu has the following options:

File
Search
Image
Version

The File Menu has the following items:

Load (Loads images onto a local or networked drive)
Data Drives (Selects which drive/folder to retrieve and store the images)
Configure (Determines available dates and cameras for the selected drive/folder)
Exit (Exits the system)

The Search menu has the following items:

Date/Lane/Time (Searches by Date, Lane, Time)
Date/Collector/Time (Searches by Date, Collector, Time)
Date/Lane/UO (Searches by Date, Lane, Unusual Occurrence)
Date/Collector/UO (Searches by Date, Collector, Unusual Occurrence)

The search criteria is explained in more detail in the next section.

The Image Menu has the following items:

Save to Disk (Saves the current image and transaction data to disk)
Save 5 to Disk (Saves the 5 images before and after current image and selected transaction data to disk)
Save 10 to Disk (Saves the 10 images before and after current image and selected transaction data to disk)
Destination Drive (Selects Drive/Folder for the stored images)

Version

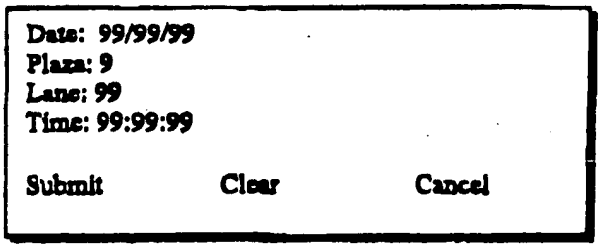
About (Displays a window with the software version on it)

X.2.3 Search Criteria

The true power and advantage of a digital VSS system is the extensive search capabilities. The system can be searched for transactions and images in the following manner:

X.2.3.1 Date/Lane/Time

This pull down menu window allows the operator to specify the starting point for locating transactions based indexed by date, then by plaza, then by lane number, then by time.



Mandatory Fields: Date, Plaza, Lane
Optional Fields: Time (If blank, then goes to first occurrence in the calendar day 00:00:00)

After filling in the fields, the operator has the option of submitting the request, clearing the values, or canceling the operation. Once the request is submitted, the toll host computer is queried and the transaction data is returned along with its digital image.

A message will be displayed if there is no associated image on the disk matches the inputted data.

Once the image and the data are displayed in the appropriate windows, the Action Bar Window will display the following options.

FRAME		TRANSACTION		
Prev.	Next	Prev.	Next	Done

FRAME Prev. – moves the image back one frame
FRAME Next – advances to the next image
TRANSACTION Prev. – Moves you back to the previous transaction in the series
TRANSACTION Next – Advances to the next transaction in the series
Done – Indicates you are finished with this series and clears the data and image windows.

X.2.3.2 Data/Collector/Time

This pull down menu window allows the operator to specify the starting point for locating transactions based indexed by date, then by collector ID, then by time.

Date: 99/99/99
Collector ID: 9999
Time: 99:99:99

Submit Clear Cancel

Mandatory Fields: Date, Collector ID
Optional Fields: Time (If blank, then goes to first occurrence in the calendar day 00:00:00)

After filling in the fields, the operator has the option of submitting the request, clearing the values, or canceling the operation. Once the request is submitted, the toll host computer is queried and the transaction data is returned along with its digital image.

A message will be displayed if there is no associated image on the disk matches the inputted data.

Once the image and the data are displayed in the appropriate windows, the Action Bar Window will display the following options.

FRAME		TRANSACTION		
Prev.	Next	Prev.	Next	Done

FRAME Prev. – moves the image back one frame
FRAME Next – advances to the next image
TRANSACTION Prev. – Moves you back to the previous transaction in the series
TRANSACTION Next – Advances to the next transaction in the series
Done – Indicates you are finished with this series and clears the data and image windows.

X.2.3.3 Date/Lane/UO

This pull down menu window allows the operator to specify the starting point for locating transactions based indexed by date, then by plaza, then by lane, then by time.

Date: 99/99/99
Plaza: 9
Lane: 99
Time: 99:99:99

Submit Clear Cancel

Mandatory Fields: Date, Plaza, Lane
Optional Fields: Time (If blank, then goes to first UO)

After filling in the fields, the operator has the option of submitting the request, clearing the values, or canceling the operation. Once the request is submitted, the toll host computer is queried and the transaction data is returned along with its digital image.

A message will be displayed if there is no associated image on the disk matches the inputted data.

Once the image and the data are displayed in the appropriate windows, the Action Bar Window will display the following options.

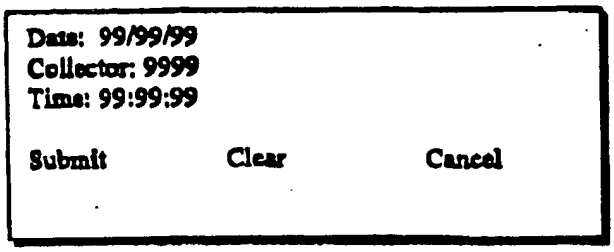
FRAME		UNUSUAL OCC.		
Prev.	Next	Prev.	Next	Done

FRAME Prev. – moves the image back one frame
FRAME Next – advances to the next image
UNUSUAL OCC Prev. – Moves you back to the previous transaction in the series (previous transaction with a corresponding unusual occurrence)
UNUSUAL OCC Next – Advances to the next transaction in the series (next transaction with a corresponding unusual occurrence)

Done – Indicates you are finished with this series and clears the data and image windows.

X.2.3.4 Data /Collector/UO

This pull down menu window allows the operator to specify the starting point for locating transactions based indexed by date, then by collector ID, then by time.

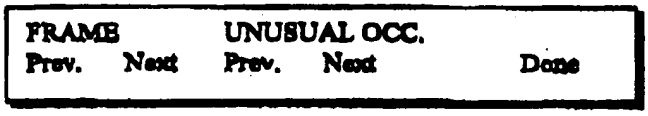


Mandatory Fields: Date, Collector ID
Optional Fields: Time (If blank, then goes to first UO)

After filling in the fields, the operator has the option of submitting the request, clearing the values, or canceling the operation. Once the request is submitted, the toll host computer is queried and the transaction data is returned along with its digital image.

A message will be displayed if there is no associated image on the disk matches the inputted data.

Once the image and the data are displayed in the appropriate windows, the Action Bar Window will display the following options.



FRAME Prev. – moves the image back one frame
FRAME Next – advances to the next image
UNUSUAL OCC Prev. – Moves you back to the previous transaction in the series (previous transaction with a corresponding unusual occurrence)
UNUSUAL OCC Next – Advances to the next transaction in the series (next transaction with a corresponding unusual occurrence)

X.2.4 Displayed Data

The following data elements are displayed in the Toll Data section of the screen:

1. Date (Calendar)
2. Date (Revenue)
3. Time

4. Plaza
5. Lane
6. Lane Mode
7. Collector ID
8. Message Type
9. ETC Serial Number
10. ETC Tag Status
11. Indicated Class
12. AVC Class
13. Indicated Axles
14. Extra Axles
15. AVC Axles
16. Fare Schedule Number

X.2.5 Unusual Occurrences

The following unusual occurrences are used to search for displayed transactions:

64	Misclass Button
65	Special Transaction
67	Post-Class Discrepancy
68	Raised Axle Transaction
72	Exit Violation
85	Convoy Discrepancy
ETC	ETC Discrepancy
EXV	ETC Exit Violation
HGT	Height Discrepancy
PCL	ETC Post Class Discrepancy

X.2.6 Data Storage and Archiving

The images are only stored on the DVAR computers and are usually not archived, therefore, no long term archival hardware or routine has been included in the design.

The images, if desired, can be archived onto any standard storage device that is supported by the installed version of Windows NT. Examples include tape drives, another Jaz drive, CD-R /CD-RW drive, etc.

X.3 VSAS System Components

The following equipment form the basis for the DVSS system (Only the new equipment supplied by TransCore is shown)

1	2	DVAS (CBB & BRB)	Dell 300 PC, 128 MB RAM, 54 GB HD, CD ROM, Ethernet Card, SCSI Card, 2GB Jaz Drive, 1 Quad Digitizer Board, Watchdog Board, 17" VGA Monitor, Windows NT
2	2	DVAS (WWB & BFB)	Dell 300 PC, 128 MB RAM, 54 GB HD, CD ROM, Ethernet Card, SCSI Card, 2GB Jaz Drive, 2 Quad Digitizer Boards, Watchdog Board, 17" VGA Monitor, Windows NT
3	1	Playback Station	Dell 300 PC, 128 MB RAM, 54 GB HD, CD ROM, Ethernet Card, SCSI Card, 2GB Jaz Drive, Watchdog Board, Matrox Video Card17" VGA Monitor, Windows NT

X.4 System Metrics

The following metrics were used in the design of the DVAS

CBB	1	7	1	86,400	7,000	604,800,000
WWB	4	15	1	86,400	7,000	2,419,200,000
BFB	3	13	1	86,400	7,000	1,814,400,000
BRB	2	10	1	86,400	7,000	1,209,600,000
Daily Total	10	45	4			6.05GB

Lachuk, Michael

From: Cohen, Andrea K.
Sent: Monday, October 12, 1998 9:35 AM
To: Lachuk, Michael
Cc: Toohey, W. Daniel .; McGrath, Alicia Q.
Subject: RE: DRPA Digital Video Audit Patent ?

Dan Toohey normally can be reached at 703-833-8370. However, he is at a conference w/me this week in Houston. I will have him give Alicia a call to set up a time to talk to you.

-----Original Message-----
From: **Lachuk, Michael**
Sent: Monday, October 12, 1998 8:48 AM
To: Worthington, John M.
Cc: Cohen, Andrea K.
Subject: RE: DRPA Digital Video Audit Patent ?

JOHN
With the shift to Microsoft Outlook, old e-mail address entries for me won't work now. John, please forward a copy of your e-mail message below with your initialing. Thanks! Andrea, where are the inventors located in the U.S. Are they local to San Diego or somewhere else.

-----Original Message-----
From: Worthington, John M.
Sent: Saturday, October 10, 1998 2:41 AM
To: 'Lachuk, Michael'
Cc: Cohen, Andrea K.
Subject: RE: DRPA Digital Video Audit Patent ?

I'll try this again. I previously sent you an e-mail which came back as undeliverable. Under TransCore's delegation of authority, as approved by SAIC, as chief operating officer of the organization, I have been designated with the group manager's approval level. Therefore, please proceed with the subject patent application.

-----Original Message-----
From: **Lachuk, Michael**
Sent: Friday, October 09, 1998 12:58 PM
To: Cohen, Andrea K.; Lewis, Russell S.
Cc: Toohey, W. Daniel .; Worthington, John M.
Subject: RE: DRPA Digital Video Audit Patent ?

TO ALL
I think the invention disclosure you sent to me is pretty good and more than sufficient to get an outside patent attorney started on interviewing the inventors and preparing the application. The attorney will be able to figure out what questions to ask of the inventors based on what we've got so far. What I'll need is the following: 1) Memo from Rusty Lewis telling me he wants the application started. IMPORTANT: We can not start on the application until I hear from Rusty. This is really the only requirement Corporate places on obtaining patents, the Boss has to say "yes". 2) Even though everyone is always busier than anything imaginable, the inventors will have to make sure they are at least telephonically available to speak to the outside attorney. Typically this latter requirement is not a big deal.

-----Original Message-----
From: Cohen, Andrea K.
Sent: Thursday, October 08, 1998 1:46 PM
To: Worthington, John M.; Lachuk, Michael

Cc: Toohey, W. Daniel .
Subject: RE: DRPA Digital Video Audit Patent ?
Importance: High

I passed Dan's patent information on to Michael this past Tuesday (10/4/98) and let him know we wanted to file an application.

Michael L: in light of this new information would you immediately proceed with getting this application filed? Let us know if you need any additional information in order to get this processed and we will expedite delivery to you.

----Original Message----
From: Worthington, John M.
Sent: Thursday, October 08, 1998 1:31 PM
To: Cohen, Andrea K.
Cc: Toohey, W. Daniel .
Subject: RE: DRPA Digital Video Audit Patent ?
Importance: High

We have caught wind that DBS may be implementing a digitally based solution in Florida. I think we need to accelerate this filing.

-----Original Message-----
From: Cohen, Andrea K.
Sent: Monday, September 21, 1998 11:52 PM
To: Toohey, W. Daniel .
Cc: Worthington, John M.; Yaktine, Darrel; Sparks, David G.; Wilson, Edward R.
Subject: RE: DRPA Digital Video Audit Patent ?

A brief description of the idea to be patented needs to be put together along with a rough schematic. Once we have the information we can commence talking to corporate legal. SAIC has told us patent costs are $20K, however Kelly feels they may be lower. I also think their is some incentive paid for by SAIC in order to assist w/the patent process.

I am not sure which group would pursue the patent or if we could work out some sort of royalty free co-ownership relationship. JMW, RSL and Craig Cummings would have to come to agreement on this.

----Original Message----
From: Toohey, W. Daniel .
Sent: Monday, September 21, 1998 2:00 PM
To: Sparks, David G.; Cohen, Andrea K.; Wilson, Edward R.
Cc: Worthington, John M.; Yaktine, Darrel
Subject: DRPA Digital Video Audit Patent ?

TransCore has been working with Kansas City in developing a digital video surveillance and audit system for the DRPA job. This system, while it is replacing a DBS video tape based system, provides a new approach and improved functionality to the visual audit that probably warrants applying for a patent on the process and protecting our IPR.

The original concept was TransCore's (mine) and further refined by Darrel Yaktine out of K.C. After discussing this system with John Simler, he thought we should look into patenting the concept.

How do handle this, where to from here? We have the write ups that we have used for internal development and also for the customer's presentation, but do not know the next steps (if we want to pursue). Wee should have an operational system by the end of the year.

SAIC 0007

KILPATRICK STOCKTON LLP - NEW MATTER FORM

Date 10/30/98 Submitting Attorney George T. Marcou Location DC Matter No.

[x] New Matter [] Reactivate Matter [] Change/Add Existing Matter Information [] Decline Matter

Conflicts Batch N/A

MATTER INFORMATION

Matter Name DRPA Digital Video Audit/Patent Application

Matter Narrative Description Patent Application

Client # 36609 Client Name Science Applications International Corporation

Contact Michael B. Lachuk Area of Practice Code 603 Department Code 61

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PATENT & TRADEMARK OFFICE

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E-mail: gmarcou@kilstock.com
Direct Dial: 202.508.5846

January 20, 1999

via Federal Express

PRIVILEGED AND CONFIDENTIAL

Mr. Dan Toohey
SAIC
7927 Jones Branch Drive
Suite 200
McLean, Virginia 22102

Re: Patent Application for "Digital Video Audit System" by Daniel Toohey et al.
Our Ref No. SAIC0001 (36609.184567)

Dear Mr. Toohey,

Enclosed is our draft of the utility application for the above identified matter. Please review it and provide us with your comments as soon as possible. It is our understanding that this system is to be fully implemented on January 29, 1999. If this is correct, we would preferably like to file this application on or before that day.

If you have any questions regarding this draft, or any questions regarding patent procedures in general, please do hesitate to contact me.

Warmest Regards,

Very truly yours,

George T. Marcou

Enclosure

cc: Mr. Michael Lachuk

GTM/bdd/SAIC0001 - 36609.184567/52131